

# *The African Organisation for Standardisation*

## **EDICT OF GOVERNMENT**

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ARS SHEA-B (2011) (English): African  
standard for shea butter (unrefined)



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# **AFRICA STANDARD FOR SHEA BUTTER (UNREFINED)**



## FOREWORD

The African Regional Organization of Standardization (ARSO) is a continental organization which harmonizes the standards developed by member countries and its regional blocks. After the harmonization process member countries are then to publish the standards.

The African Regional Organization of Standardization is a member of the International Organization for Standardization (ISO).

Pure unrefined shea butter has medicinal, nutritional and moisturizing properties. It is also an excellent ingredient for food, soaps, lotions and creams and a potential foreign exchange earner.

As more people become aware of the medicinal properties of pure unrefined shea butter which sets it apart from other seed butter, the demand for this natural product has increased both locally and internationally. For this reason, it has become very necessary to establish a Regional Standard for unrefined shea butter in order to ensure consumer safety and fair trade practices.

The elaboration of this Africa Standard was carried out through a Regional Technical Committee drawn from the National Standards Bodies from the shea zone. Draft standards in the producer countries were widely circulated for public review and consultations (with direct involvement of the private sector and industry) both national and international, in order to assess and record the perspectives of a wide variety of stakeholders. The harmonisation process was done based on the African harmonisation model. The results of national consultation work was presented, reviewed and finalized at a regional inter-governmental consultation before recommending the standard to ARSO for declaration as Africa Standard.

This standard has been elaborated with a view to serve as a reference for professionals of the sector, consumers and institutions engaged in research, analysis and enforcement, in the framework of application of quality requirements to facilitate national, regional and international trade in shea butter

Reference to national and international publications as well as work of private sector and industries are hereby acknowledged.

Users should note that this standard undergoes revision from time to time and any reference to it statutorily implies its latest edition.

## **1.0 Scope**

The objective of this standard is to define the quality characteristics, sampling and test of unrefined shea butter destined for human use. This standard applies to unrefined shea butter intended for direct consumption, or used as ingredients in the manufacture of food products and non-food products.

## **2.0 Normative References**

The following references contain provisions applicable to this Standard. At the time of publication the editions indicated were valid.

All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the recent editions of the standards indicated below.

AOAC 952.13 (1999) Determination of arsenic content

CAC/RCP 1 – 1969, (Rev. 4 – 2003) Recommended International Code of Practice - General Principles of Food Hygiene

ISO 660: 1996 Animal and vegetable fats and oils - Determination of acid value and acidity

ISO 662: 1998 Animal and vegetable fats and oils - Determination of moisture and volatile matter content.

ISO 663: 2000 Animal and vegetable fats and oils - Determination of insoluble impurities content

ISO 3657: 2002 Animal and vegetable fats and oils - Determination of saponification value

ISO 3596: 2000 Animal and vegetable fats and oils - Determination of unsaponifiable matter

ISO 3960: 2001 Animal and vegetable fats and oils - Determination of peroxide value

ISO 3961: 1996 Animal and vegetable fats and oils - Determination of iodine value

ISO 5555: 2001 Animal and vegetable fats and oils – sampling

ISO 6321: 2002 Animal and Vegetable fats and oils - Determination of melting point in open capillary tubes

ISO 8294: 1994 Animal and vegetable fats and oils - Determination of copper, iron, and nickel content

ISO 12193: 2004 Animal and vegetable fats and oils - Determination of lead content

CODEX CAC/GL 21–1997 Principles for the Establishment and Application of Microbiological Criteria for Foods

IUPAC 2.101 – Determination of relative density

CODEX STAN 1-1985, (Rev. 1-1991): Codex General Standard for the Labelling of Prepackaged Foods

CODEX STANDARD 229 (1993, revised 2003) Analysis of pesticide residues – Recommended methods

CODEX STAN 193 -1995, (Rev.1-1997) General Standard for Contaminants and Toxins in Foods.

CODEX STAN CAC /GL 50: 2004 Guidelines for Sampling

CAC/RCP 1 - 1969, (Rev. 4 - 2003) Recommended International Code of Practice - General Principles of Food Hygiene

CAC/MRL 1 Maximum Residue Limits (MRL's) for pesticides: 2001

### **3.0 Terminology**

For the purposes of this Standard, the following terminologies shall apply.

#### **3.1 Unrefined Shea Butter**

The oleaginous material obtained from the Kernel of the tree *Vitellaria paradoxa* Cf Gaertn, by manual or mechanical methods. It is obtained by thermal process or cold pressed process without altering the nature of the fat. It may be purified by washing with water, settling, filtering and centrifuging.

#### **3.2 Consignment**

The quantity of shea butter despatched at one time and covered by a particular contract or shipping document, and which may comprise of one or more lots or parts of lots.

#### **3.3 Lot**

A stated quantity of the consignment that is of uniform characteristics and which will allow the quality to be assessed as a unit.

### **4.0 Quality requirements**

#### **4.1 General**

Shea butter shall be free from admixture with other fats and oils, and free from other adulterants. Shea butter shall be processed in accordance with Good Manufacturing Practice (GMP). The water used in processing shea butter shall meet the requirements of the current edition of the WHO guideline for drinking water. Sheakernels for the processing of sheabutter shall conform to the requirements of the Africa Standard for Shea kernel

##### **4.1.1 Organoleptic characteristics**

The colour of unrefined shea butter shall be characteristic of the product.

The smell and taste of unrefined shea butter shall be characteristic of the shea butter and shall be free from rancid odour and taste.

#### 4.2 Specific quality criteria

Shea butter shall conform to the quality criteria specified in Table 1 when tested by appropriate methods.

**Table 1 - Specific quality criteria for unrefined sheabutter**

Parameters	Permissible limits					
	Type 1		Type 2		Type 3	
	Min.	Max.	Min.	Max.	Min.	Max.
<b>Moisture Content (%) m/m</b>	-	0.05	> 0.05	- 0.2	> 0.2	- 2.0
<b>Free Fatty Acid / FFA (%) m/m</b>	-	1.0	> 1.0	- 3.0	> 3.0	- 8.0
<b>Peroxide Value (mEq/kg)</b>	-	10.0	> 10.0	- 15.0	> 15.0	- 50.0
<b>Insoluble Impurities (%) m/m</b>	-	0.09	> 0.09	- 0.2	> 0.2	- 2.0

- 1 The limits of these essential descriptive factors of composition and quality of generic unrefined shea butter may appear very broad, with a large range of values between the minimum and maximum values, as these descriptors take into account the actual variation in characteristics found in shea butter of all the producing areas.

<sup>a</sup> Unrefined shea butter of type1 can serve the needs of the cosmetic and pharmaceutical industries, and for direct consumption.

<sup>b</sup> Unrefined shea butter of type 2 can serve the needs of the food industry (confectionery, chocolate, edible oil, or as a basis for margarines).

<sup>c</sup> Unrefined shea butter of type 3 can serve the needs of the soap-making industries, or can be refined for direct consumption.

#### 4.3 Identity Characteristics

Shea butter shall also comply with the identity characteristics as specified in Table 2 when tested by appropriate methods.

**Table 2 - Identity characteristics of unrefined sheabutter**

Relative density g/ml (40 °C)	0.89 - 0.93
Saponification Value (mg KOH/g)	160 - 190
Iodine Value (wijs)	30 - 75
Unsaponifiables (%)	1 - 19
Refractive Index at 44 °C	1.4620 - 1.4650
Melting Point (°C)	32 - 40
Volatile Matter at 105 °C (% m/m)	< 0.2
Soap Content (% m/m)	< 0.005

**4.3.1 Fatty acid composition of unrefined shea butter**

Unrefined sheabutter shall conform to the fatty acid composition as indicated in table 3

**Table 3 Fatty Acid composition of unrefined shea butter**

Fatty Acid	levels of fatty acids <sup>1</sup> % m/m
Lauric Acid (C 12 : 0)	< 1
Myristic Acid (C 14 : 0)	< 0.7
Palmitic Acid (C 16 : 0)	2 - 10
Palmitoleic Acid (C 16 : 1)	< 0.3
Stearic Acid (C 18 : 0)	25 - 50
Oleic Acid (C 18 : 1)	36 - 62
Linoleic Acid (C 18 : 2)	1 - 11
Linolenic Acid (C 18 : 3)	< 1
Arachidic Acid (C 20 : 0)	< 3.5

<sup>1</sup> Samples for which the fatty acid composition does not correspond to the ranges indicated do not conform to the standard. According to user requirements, other criteria of a non-



constraining nature may be applied to confirm whether a given sample conforms to the specifications which define the standard.

## **5.0 Food additives**

Food additives are not permitted.

## **6.0 General hygiene requirements**

The product covered by the provisions of this standard shall be prepared and handled in accordance with the appropriate sections of CAC/RCP 1 - 1969, (Rev. 4 - 2003) Recommended International Code of Practice - General Principles of Food Hygiene

## **7.0 Contaminants**

### **7.1 Heavy metals**

Unrefined shea butter shall not contain heavy metals in amounts that may present a hazard to human health and shall not exceed the limits specified as follows:

<b><u>Element</u></b>	<b><u>Maximum Limit</u></b>
Lead (Pb)	0.1 mg/kg
Arsenic (As)	0.1 mg/kg
Iron (Fe)	5.0 mg/kg
Copper (Cu)	0.4 mg/kg

### **7.2 Pesticide residues**

Pesticide residues in unrefined shea butter shall be in accordance with CAC/MRL 1 Maximum Residue Limits (MRL's) for pesticides: 2001.

## **8.0 Microbiological requirement**

When tested by appropriate methods of sampling and examination, the product shall comply with the following:

- It shall be free from pathogenic microorganisms which may present hazard to health
- It shall not contain any substances originating from microorganisms in amounts which may present a health hazard.
- The Total Viable Count (TVC) shall not exceed  $1 \times 10^3$  cfu/g
- The mould count shall not exceed  $1 \times 10^2$  cfu/g

## **9.0 Packaging and Labelling**

### **9.1 Packaging**

The packaging material, shall be made of substances which are safe and suitable for their intended use. The containers shall not impart any toxic substance or undesirable odour or flavour to the product and the containers shall be clean, sealed airtight and be tamper-proof.

### **9.2 Labelling**

The product shall be labeled according to the provisions of Codex General Standard for Labelling of Prepackaged Foods - CODEX STAN 1 1985, Rev. 2001. In addition, each bag shall be legibly and indelibly marked with the following information.

#### **The name of product**

#### **Name and Address of manufacturer and/or packer**

The name and location address of the manufacturer and/or packer of the product shall be declared.

#### **Net content**

The net contents shall be declared in metric system of measurement.

#### **Lot Identification/Batch number, date of manufacture and Best Before Date**

Each container shall be embossed or otherwise permanently marked in clear to identify the lot/ batch, date of manufacture and best before date

#### **Storage condition**

Storage of shea butter in cool dry place away from direct sunlight shall be declared on the label

For bulk packages, shipment shall be accompanied by documents specifying the labelling requirements.

## **10.0 Sampling**

Sampling shall be done in accordance with the provisions of ISO 5555: 2001 and Codex Standard CAC/GL 50 Guidelines for Sampling.

## **11.0 Testing**

The samples drawn **shall** be tested for compliance with the requirements of this specification according to the appropriate methods of test specified as follows:

#### **Determination of Moisture Content**

AOAC 920.116

IUPAC 2.60

ISO 662:1998

#### **Determination of Free Fatty Acid Content: Acid Value, FFA**

ISO 660:1996

IUPAC 2. 201

#### **Determination of Relative Density**

IUPAC 2.101

#### **Determination of Saponification Value**

ISO 3657: 2002  
IUPAC 2.202  
**Determination of Iodine Value**  
AOAC 925.56  
ISO 3961: 1996  
**Determination of Peroxide Value**  
AOCS cd. 8b – 90  
IUPAC 2.501  
ISO 3960: 2001  
**Determination of Unsaponifiable Matter**  
ISO 3596: 2000  
IUPAC 2.401  
**Determination of Insoluble Impurities**  
ISO 663: 2000  
IUPAC 2.604  
**Determination of Melting Point**  
ISO 6321: 2002  
**Determination of Fatty Acid Composition**  
ISO 5508:1990  
IUPAC: 2.201  
IUPAC 2.301  
IUPAC 2.302  
IUPAC 2.304  
**Determination of Lead content (Pb)**  
ISO 12193: 2004  
AOAC 972.25  
AOAC 994.02  
IUPAC 2.632  
**Determination of Arsenic Content (As)**  
AOAC 952.13  
IUPAC 3.136  
**Determination of Iron Content (Fe)**  
ISO 8294: 1994  
AOAC 990.05  
IUPAC 2.631  
**Determination of Copper Content (Cu)**  
ISO 8294:1994  
AOAC 990.05  
IUPAC 2.631  
**Determination of Matter Volatile at 105°C**  
IUPAC 2.501  
ISO 662: 1998  
**Determination of Soap Content**  
BS 684 Section 2.5  
**Determination of Refractive Index**  
IUPAC 2.102  
ISO 6320: 2000

## **12.0 Criteria for conformity**

A lot shall be declared as conforming to this Standard if the final sample satisfies all the requirements given in this standard.